

# PATENT SPECIFICATION



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321,873

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## COMPLETE SPECIFICATION.

### Web Assembling Apparatus for use in Printing Machines.

We, R. HOE & Co. LIMITED, a company organised under the laws of Great Britain, of 109, Borough Road, London, S.E. 1, do hereby declare the nature of this invention (which has been communicated to us by R. Hoe & Co. Inc., a company organised and existing under the laws of the State of New York, of 504, Grand Street, City, County and State of New York, United States of America), and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to web assembling apparatus for use in printing machines, and to an improved method of guiding the webs.

The main object of the present invention is to provide mechanism by which a comparatively wide web of paper, or a plurality of such webs placed one upon the other, may be cut or slit into narrower strips and said strips distributed in various ways as may be desired, and assembled with other strips and cut and folded in a simple and efficient manner.

According to one feature of the present invention, web assembling apparatus comprises in combination a former over which a plurality of webs can pass, a plurality of cutting cylinders, and means intermediate said former and said cutting cylinders adapted to separate said webs and separately direct the same with reference to said cutting cylinders.

According to a further feature of the invention, the method of deflecting a group of webs out of a straight line and into a new direction at a substantial angle to their then direction without wrinkling or buckling consists in dissociating the webs, leading the dissociated webs separately towards a pair of cutting cylinders, associating said webs and subjecting said webs to the action of the cutting cylinders.

The invention is illustrated in the accompanying drawings, in which figure 1 is a diagrammatic view of a folding mechanism showing one embodiment of my invention, and figure 2 is a similar view showing a modification of the same.

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In carrying our invention into effect in the particular embodiment thereof which is shown in figure 1 of the accompanying drawings, there are provided formers 11, 11 of the usual or any suitable construction, over which one or more webs of paper may be passed. In the drawings, the formers are shown covered by paper which is passing over the same, the paper being designated 50. Adjacent the upper part of these formers is a rod 12 upon which are swingingly mounted a series of rotating knives or cutters 13, which are adapted to cut the webs passing over said formers into narrower strips, in a manner which will be well understood from an examination of the drawings.

In figure 1 of the drawings, a series of wide webs are shown passing over the duplex former, with three cutting knives in operation, which sever these wide webs longitudinally into four narrower series of webs, which then proceed down over the formers in the usual manner. Assuming that, as shown in figure 1, there are three layers or webs of paper passing over the duplex former, it will be seen that these are cut into four series of narrow webs, each of which will comprise three layers of paper, and that these can be disposed of in various ways, by threading the different layers in different combinations through the various rollers. For instance, the three layers or webs of paper which pass over the left hand half of the duplex former in figure 1, will be folded and passed through between the rollers 14 as a six-ply web. From that point it would be possible to pass the whole series of six webs down between the rollers 16, 17 and 18 (the said series of webs being at this point designated by the reference numeral 54) and then down through the cutting cylinders 22 and 23 where the webs are cut into suitable lengths, folded between the rollers 26 by a suitable tucking blade, delivered into the fly-delivery 28 and from there to the delivery belt 30, all in a manner which will be understood. Or, if desired, two webs may be deflected to the right after passing between the rollers 16, and pass over the roller 32, two more may be de-

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deflected after passing between the rollers 17 and pass over the roller 33, and the remaining two may be deflected after passing between the rollers 18 and pass over the roller 34, all these six being then collected together and assembled with the complementary webs which have passed down from the right hand half of the duplex former, between the rollers 15, 19, 20 and 21, the whole series of twelve narrow webs then passing between the cutting cylinders 24, and 25, folding rollers 27, and into the fly-delivery 29 and to the delivery belt 31.

It will be seen that many different combinations may be made and the various webs or layers of associated webs may be separated and assembled in different ways, and that when desired it may be provided whenever it is necessary that but a small number of layers of paper will pass over any one roller at any considerable angle, so as to avoid the creeping, buckling and wrinkling of the layers one upon another, which would otherwise result.

In the modification of the invention shown in figure 2, there are provided formers 11 and knives 13 mounted on a rod 12, as in figure 1. There are also provided rollers 40 and 41 on one side and rollers 42 and 43 on the other side, but in this form of the invention there are provided additional pairs of rollers 44 and 45, as will be seen in the middle portion of figure 2. The remainder of the mechanism in figure 2 is substantially the same as in figure 1.

In the construction shown in figure 2, the webs pass between the rollers 44 and 45 respectively, and one severed web passing from one side of the duplex former 11 is associated with the two severed webs passing from the other side of the former, as is indicated in dotted lines, the associated webs then passing to one or other group of cutting cylinders, while the remaining severed web passes to the other group of cutting cylinders.

In this arrangement also the cutting cylinders 22, 23 and 24, 25 are located out of the normal line of travel of the webs.

The operation of the invention has been already sufficiently described in what has been said above with regard to its construction, and the advantages have been to some extent pointed out, and indeed are obvious from an examination of the drawings. Attention is, however, directed to the fact that the form of invention shown in figure 2 is particularly well adapted to cases where vertical space is limited and a somewhat compressed form of construction is re-

quired, while the form shown in figure 1 is better adapted to handling a large number of superimposed webs or layers of paper without slipping, wrinkling or buckling.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In a web assembling apparatus for use in printing machines, the combination of a former over which a plurality of webs can pass, a plurality of cutting cylinders, and means intermediate said former and said cutting cylinders adapted to separate said webs and separately direct the same with reference to said cutting cylinders.

2. A web assembling apparatus as claimed in claim 1, in which two cutting cylinders are provided and in which the means intermediate the former and cutting cylinders is adapted to receive the webs from a portion of the former, separate the webs and separately direct the webs with reference to a web from another portion of said former and with reference to said cutting cylinders, said means comprising a plurality of pairs of rollers adjacent said former and at varying distances therefrom, one pair of said rollers being adapted to pass certain of said webs of paper therebetween and to permit one of said webs to be deflected laterally therefrom after passing there-through, a succeeding pair of said rollers being adapted to pass certain of said webs of paper, not including the web previously deflected, therebetween, and to permit one of said webs after passing therethrough to be deflected laterally therefrom, and a plurality of rollers located laterally of said pairs of rollers, adapted to receive said deflected webs of paper respectively and direct the same with reference to a web from another part of said former and with reference to said cutting cylinders.

3. A web assembling apparatus as claimed in claim 1, comprising a pair of cutting cylinders for the webs, located out of the normal line of travel of said webs.

4. The method of deflecting a group of webs passing from a printing machine out of a straight line and into a new direction at a substantial angle to their then path, without wrinkling or buckling, which consists in dissociating said webs, leading said dissociated webs separately toward a pair of cutting cylinders, associating said webs and subjecting said webs to the action of said cutting cylinders.

5. Web assembling apparatus for use in printing machines, substantially as

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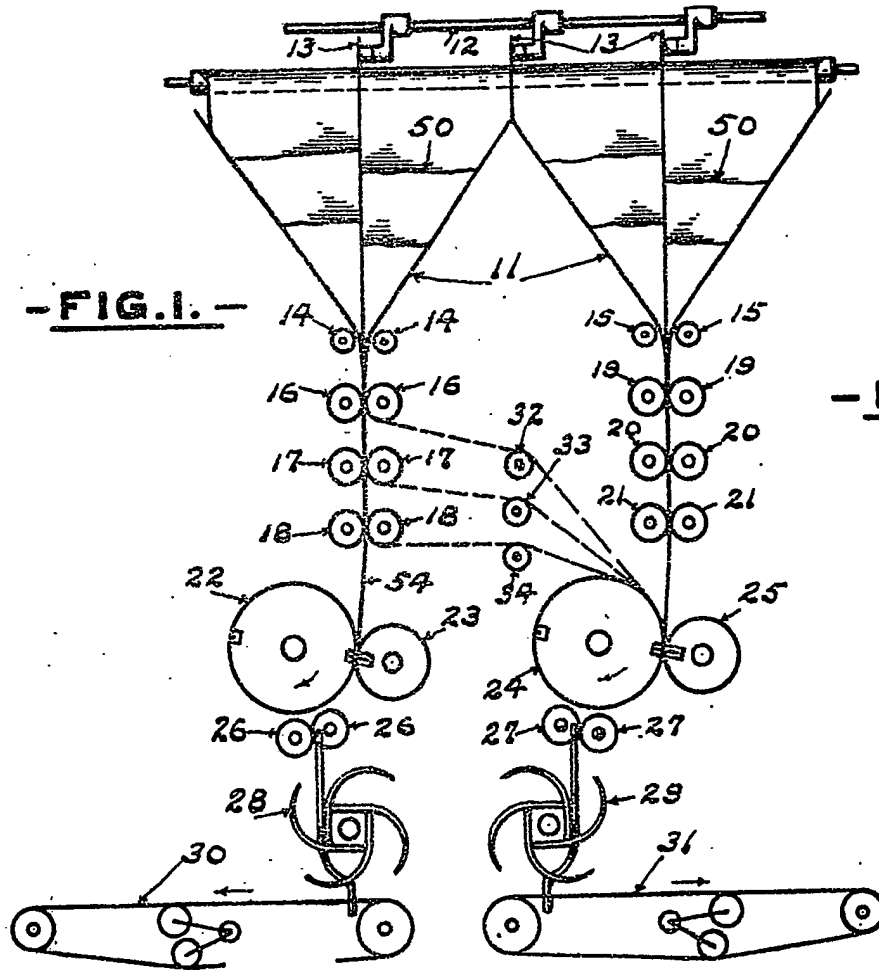
described with reference to the accompanying drawings.

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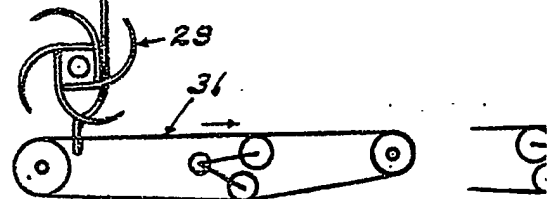
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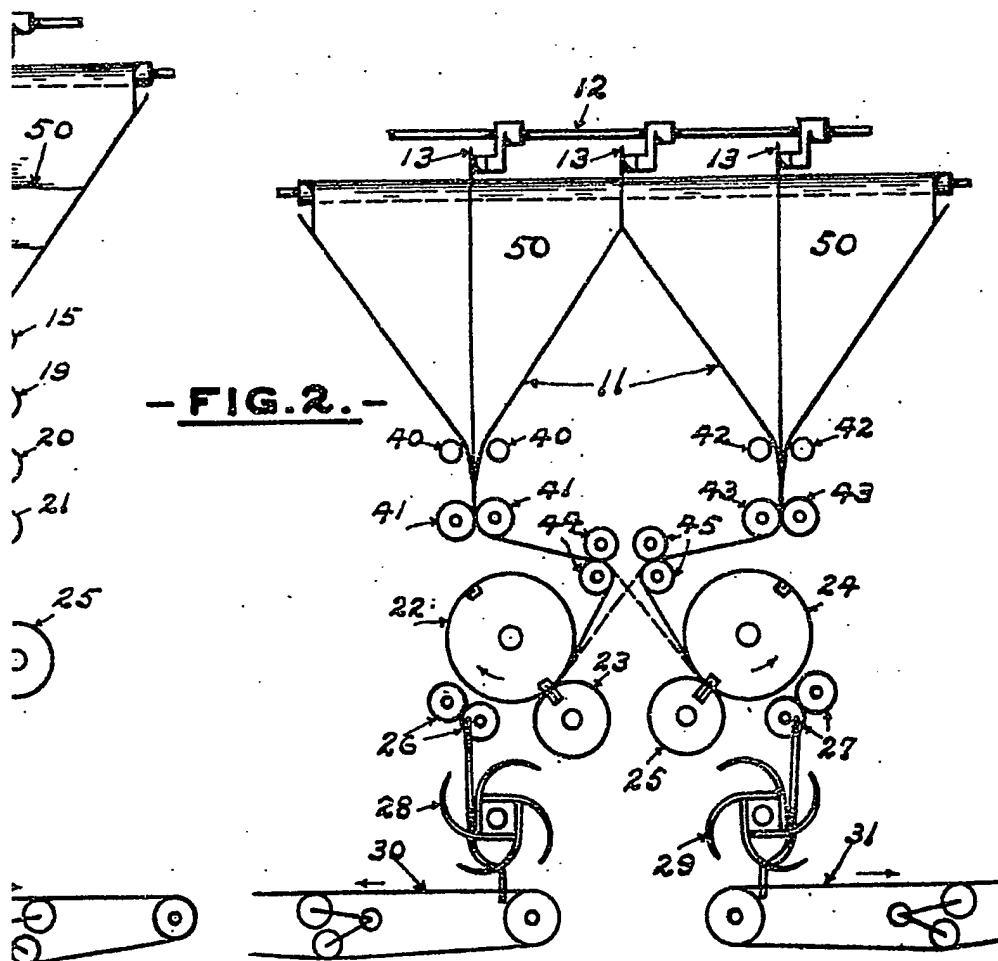
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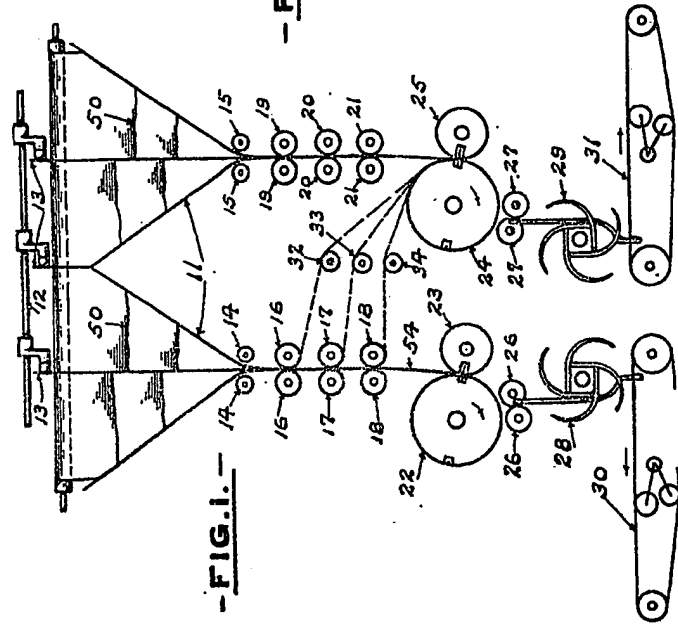
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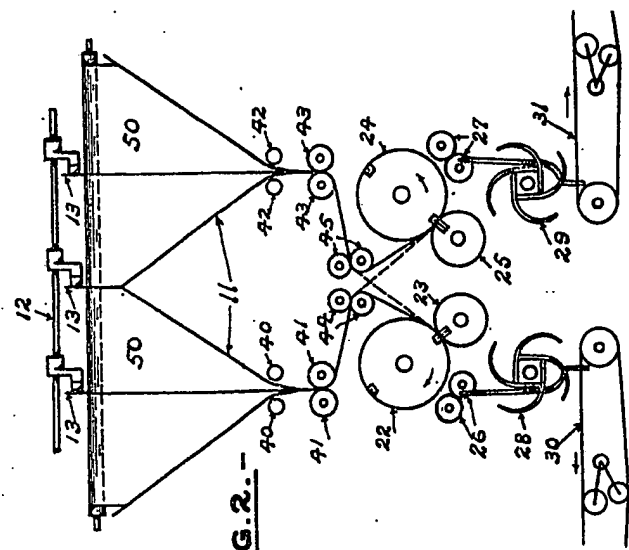
- FIG. 2







-FIG. 1.-



-FIG. 2.-

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